

1/20

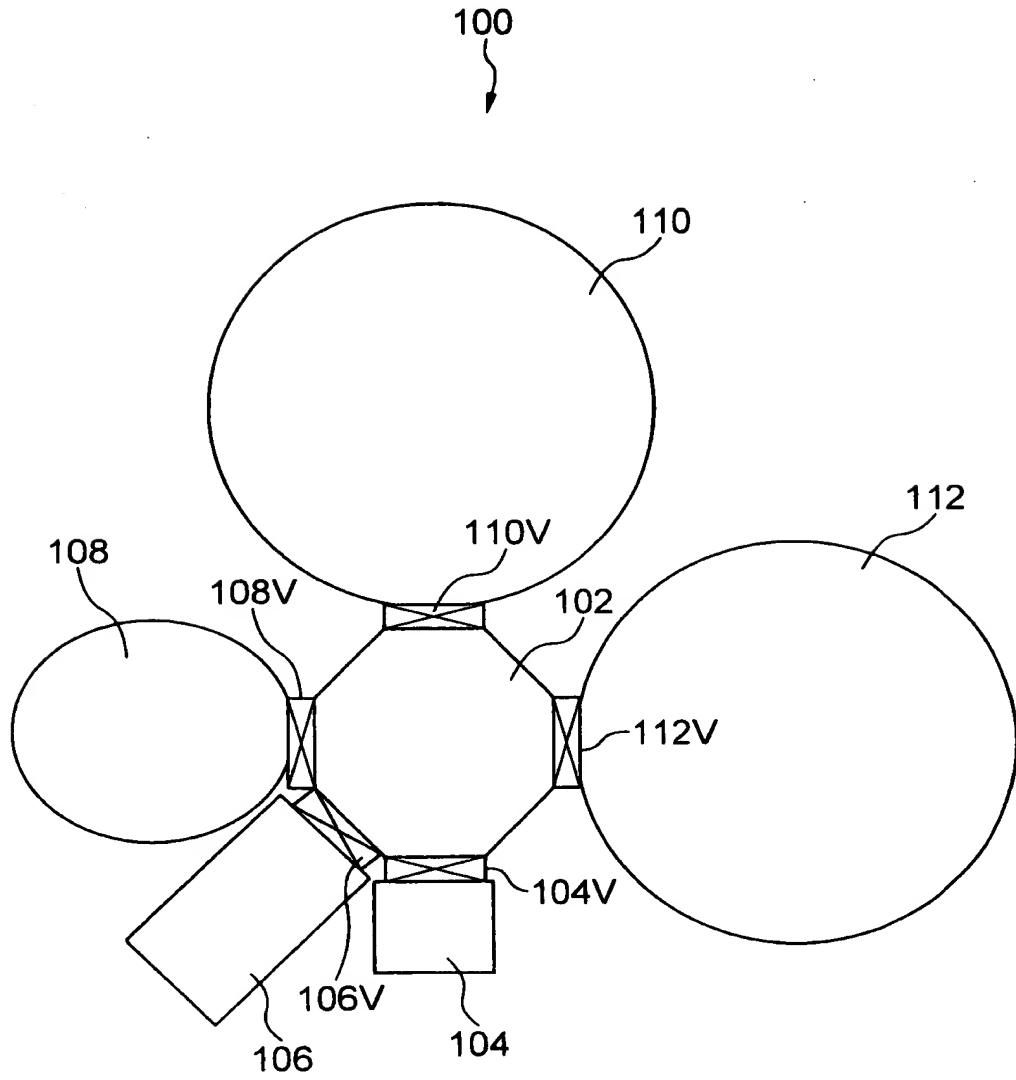


FIG. 1

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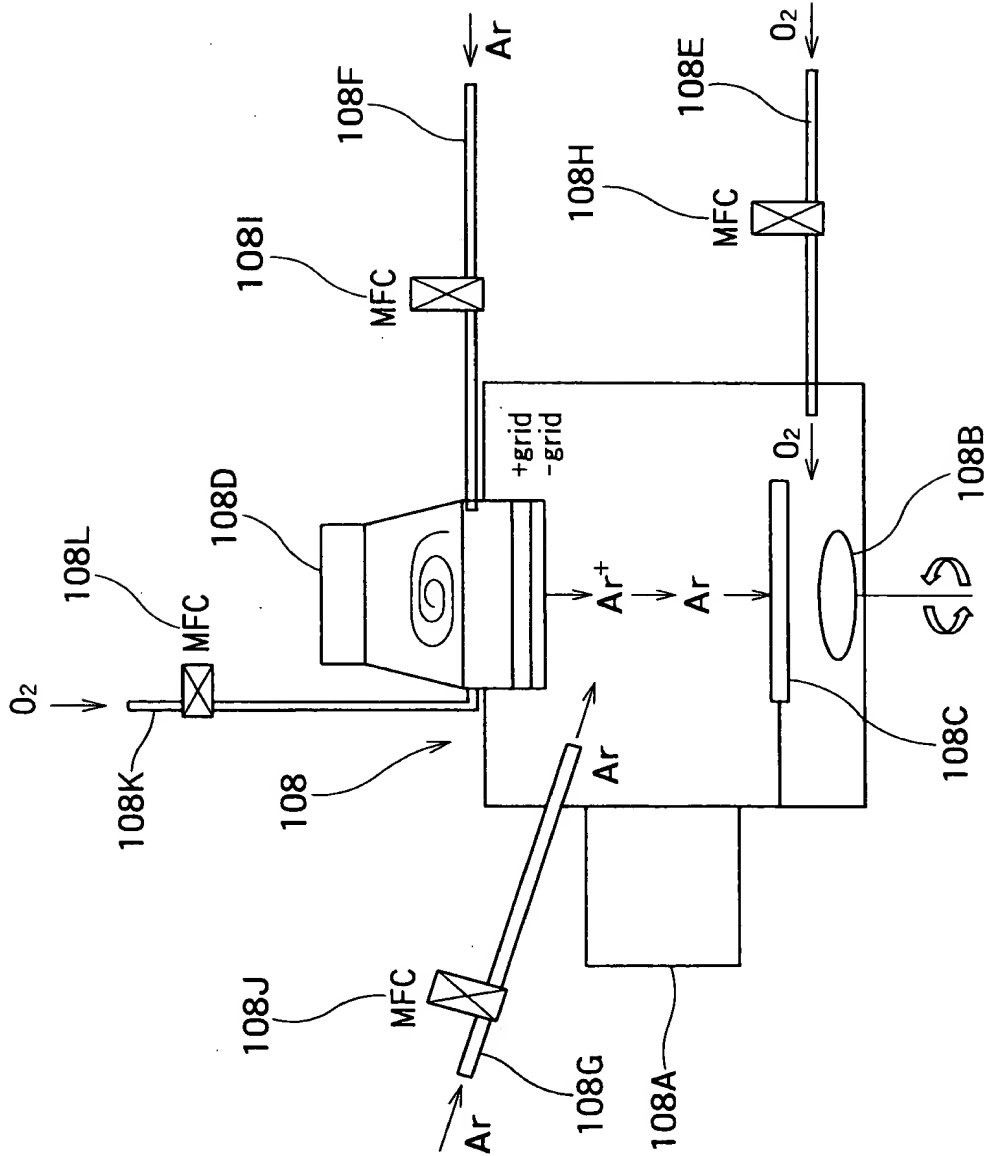


FIG. 2

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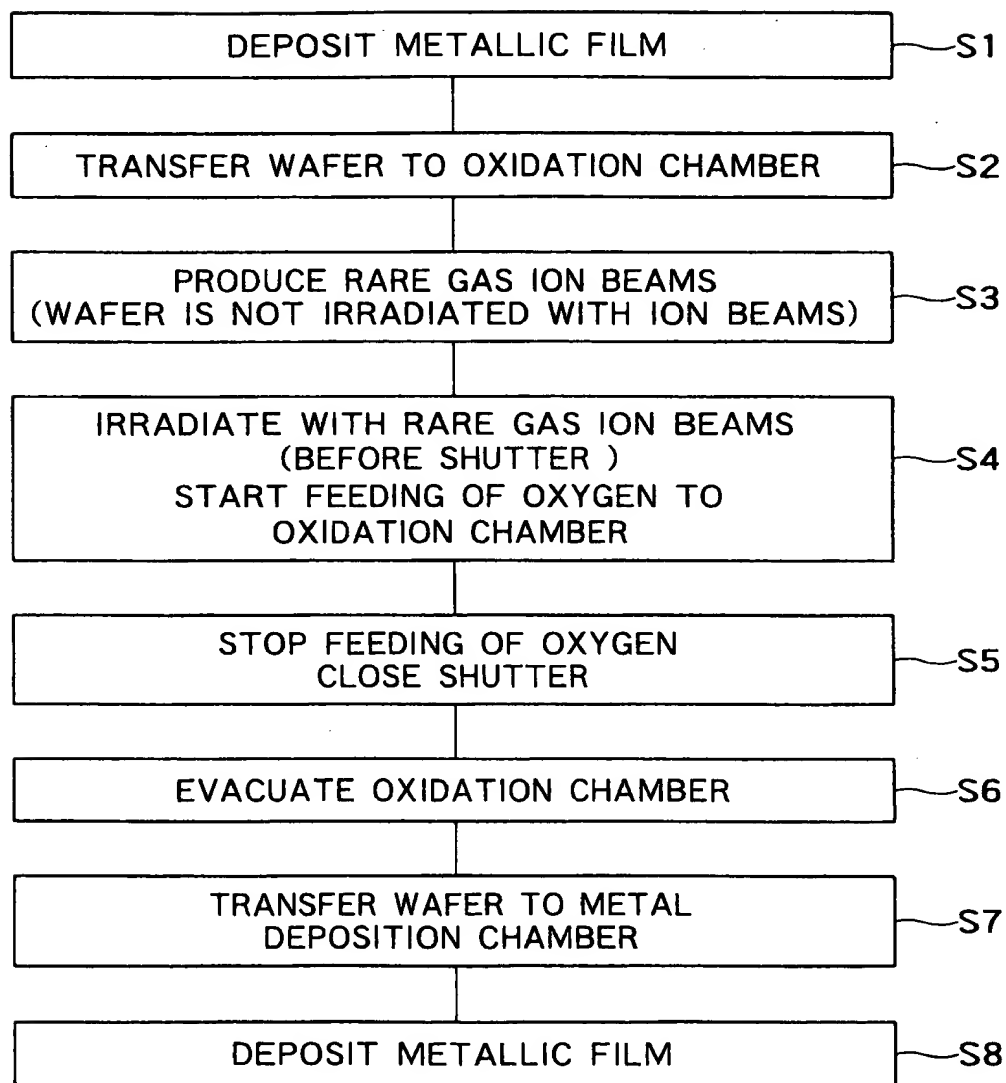


FIG. 3

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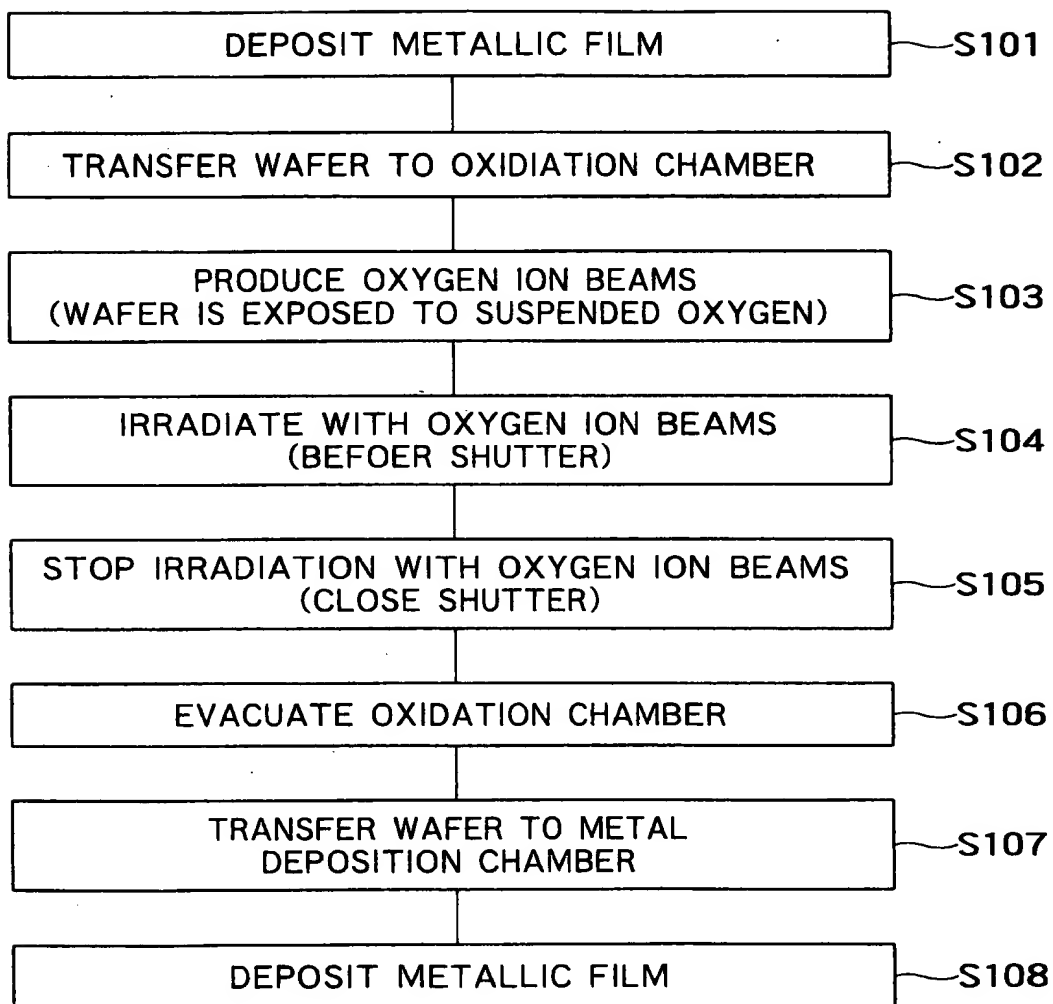


FIG. 4

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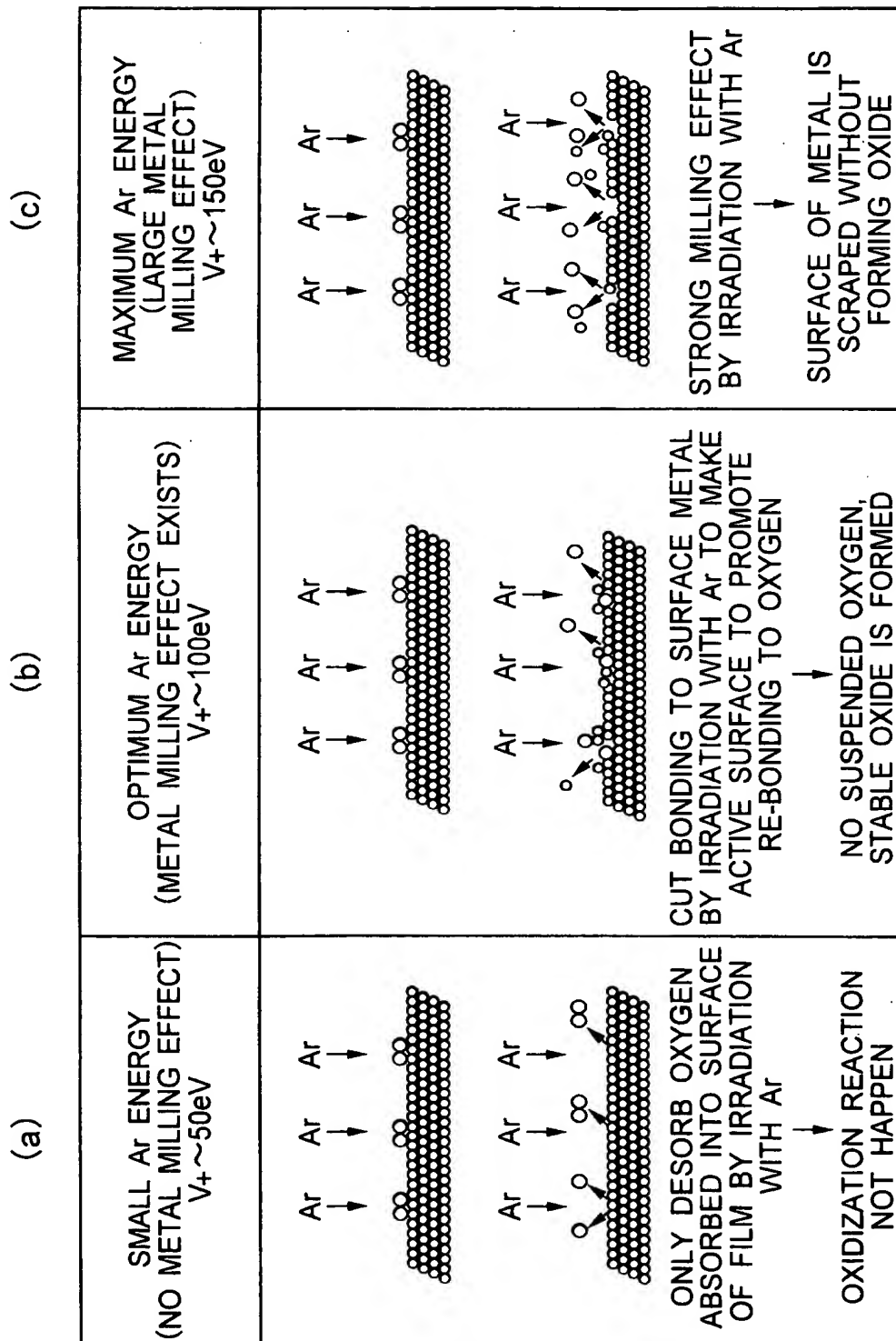


FIG. 5

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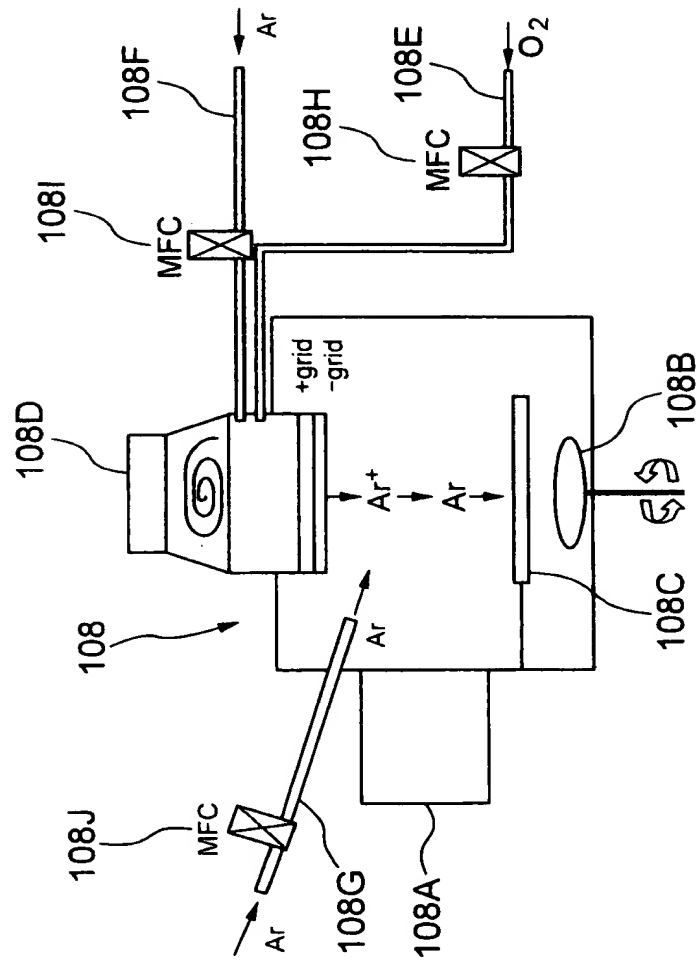


FIG. 6

FIG. 6

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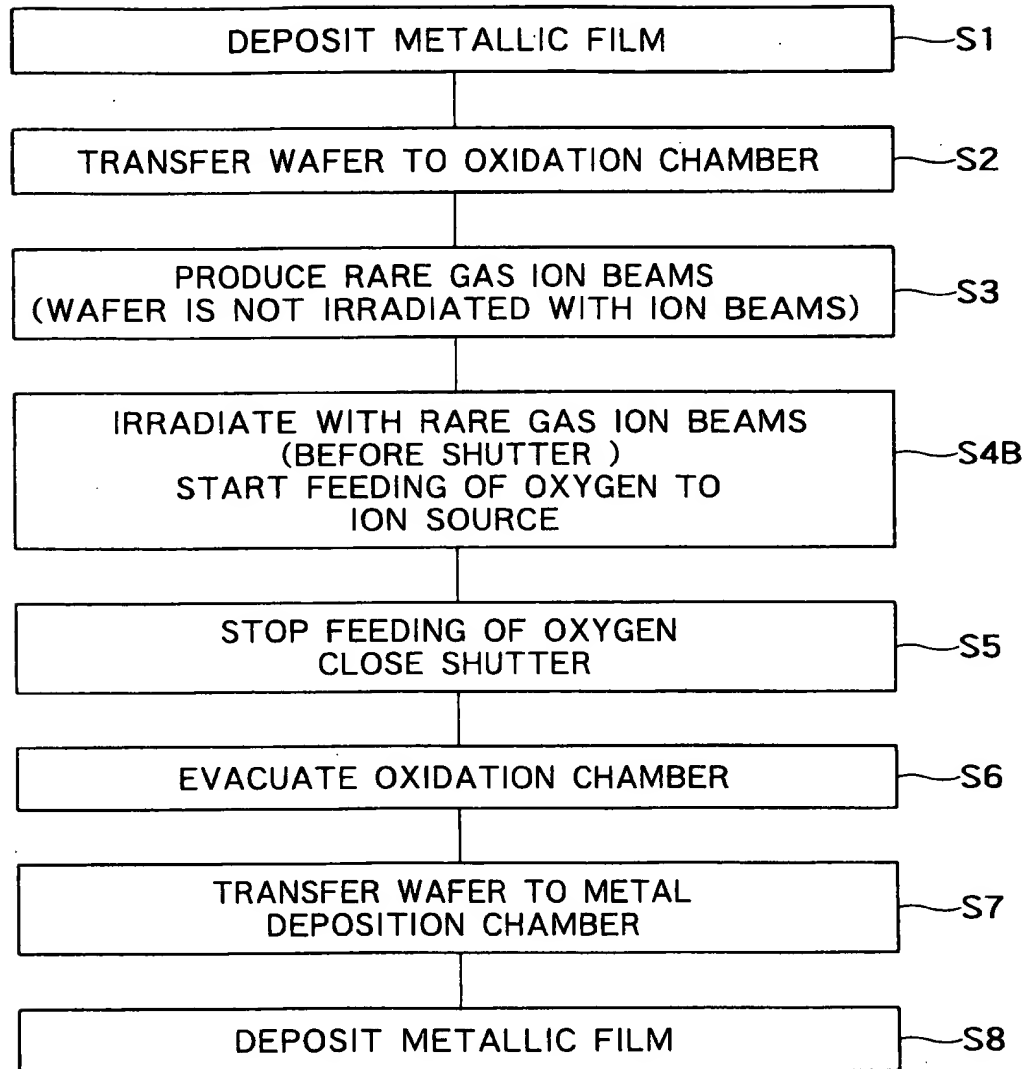


FIG. 7

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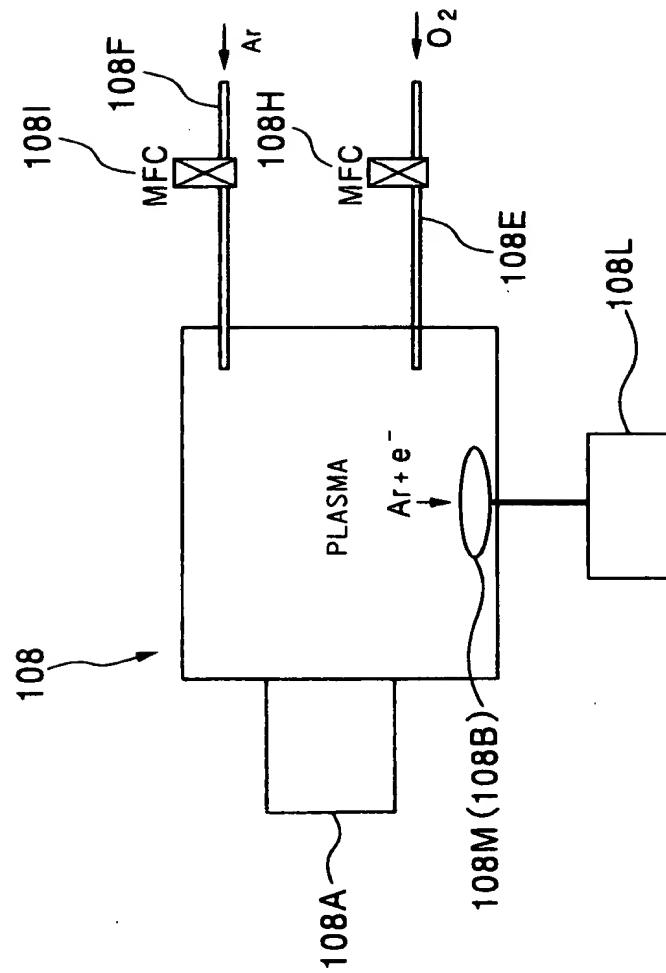


FIG. 8

FIG. 8



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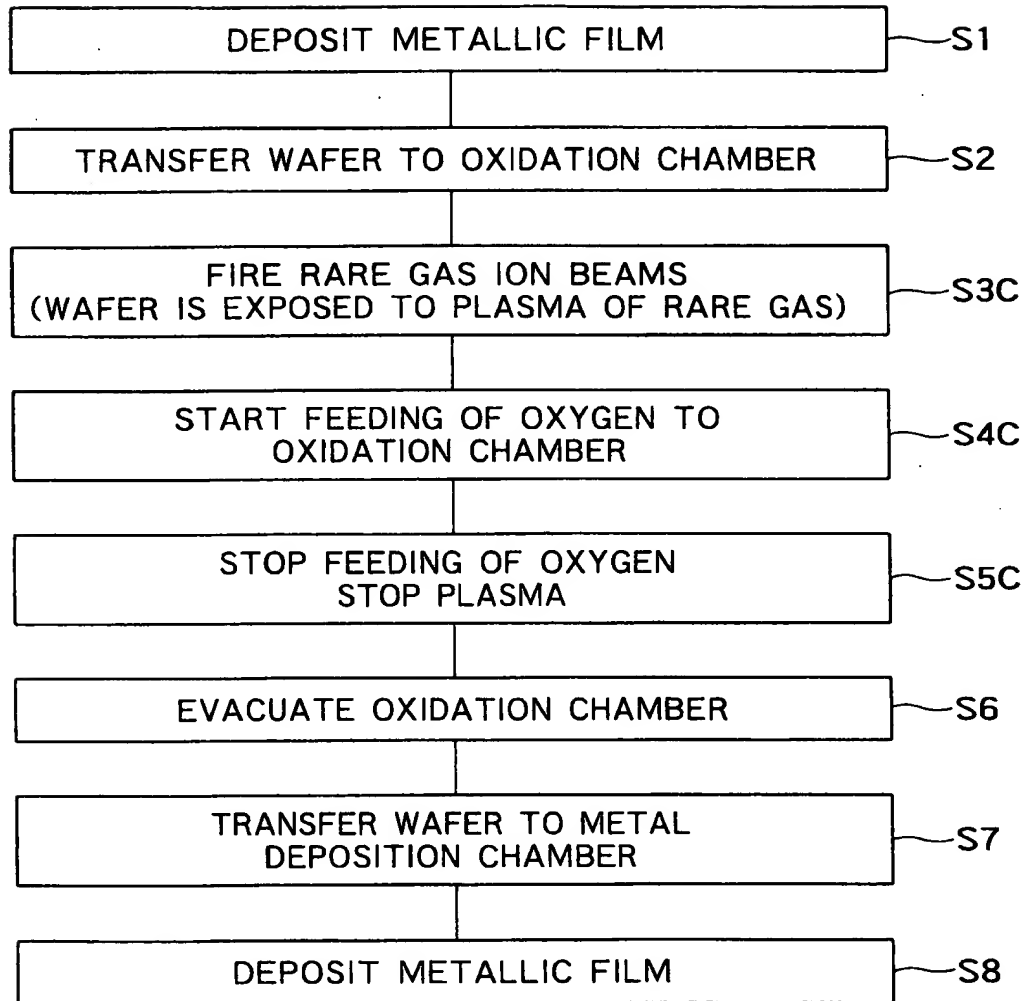


FIG. 9

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FIG. 10

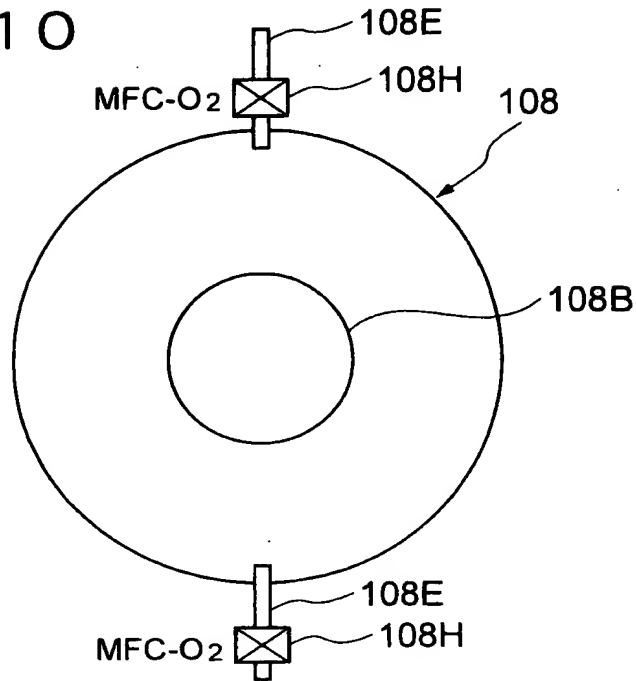
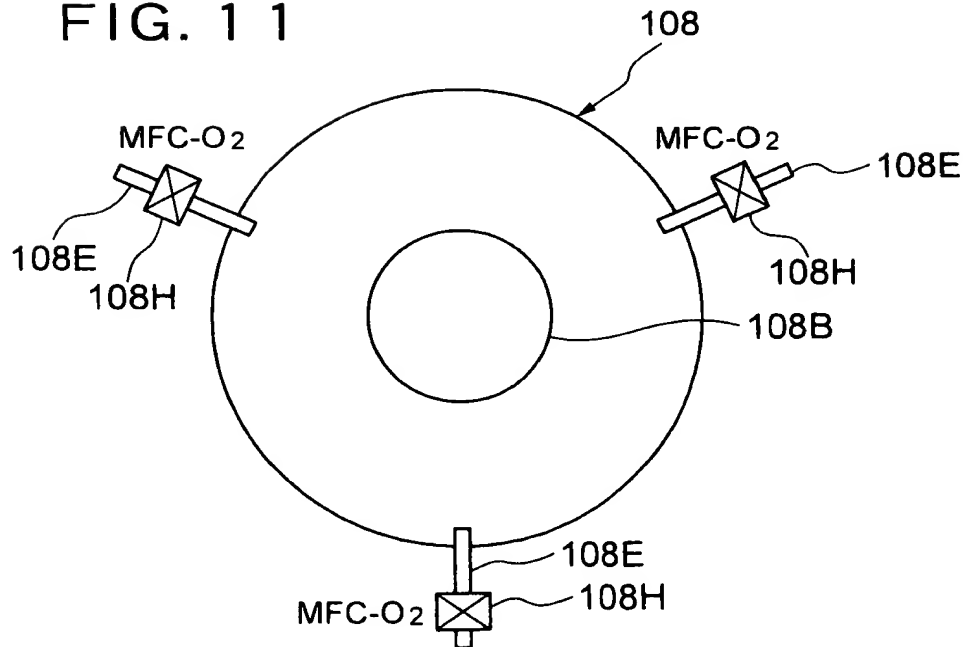


FIG. 11



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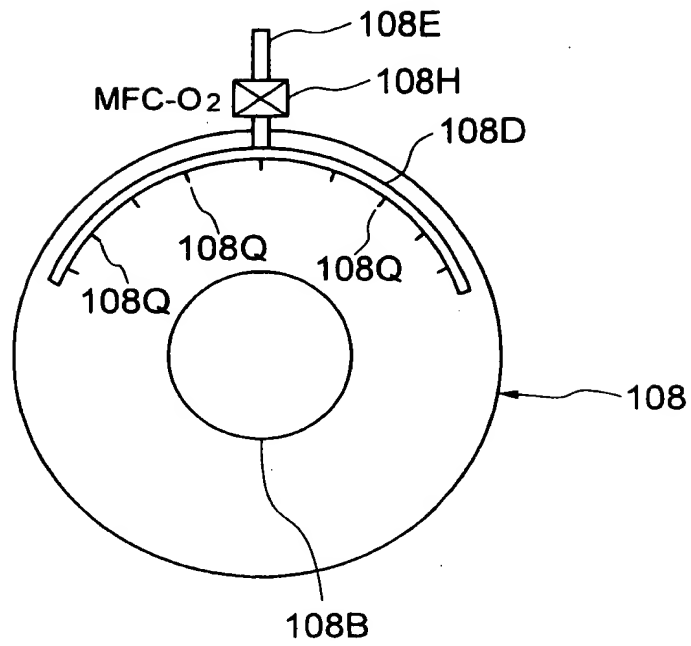


FIG. 12

FIG. 12

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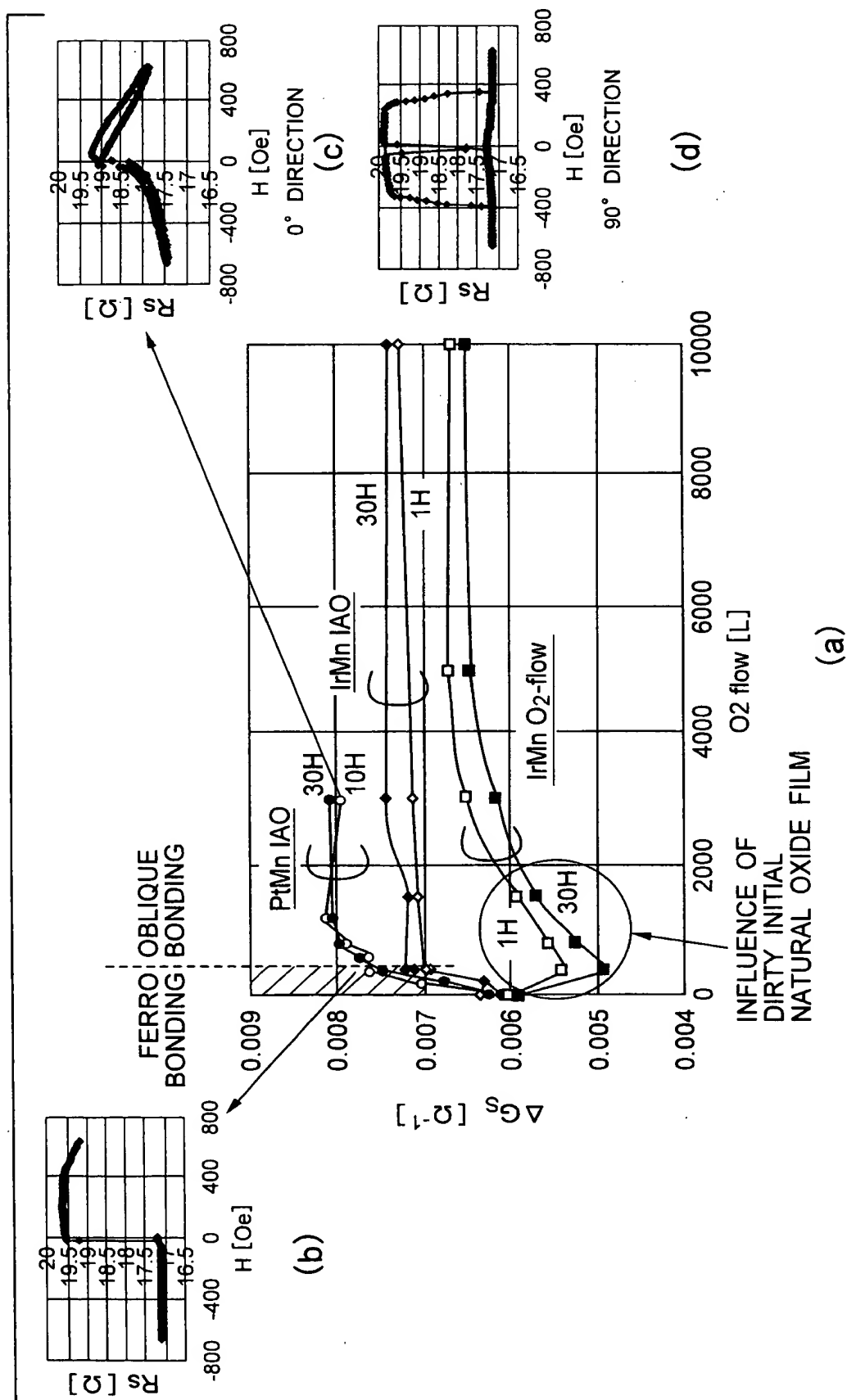


FIG. 13

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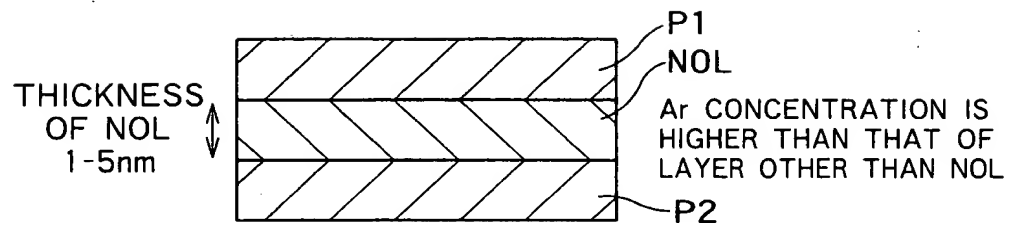


FIG. 14

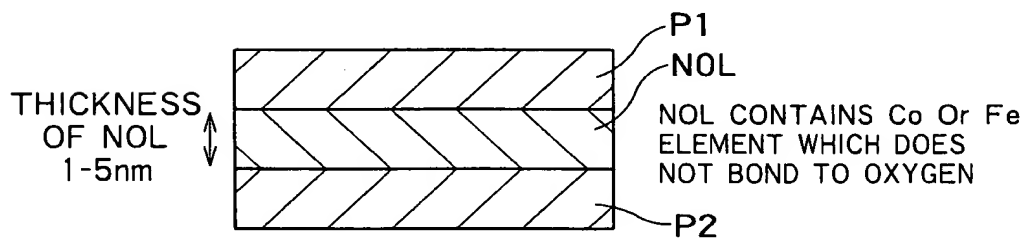
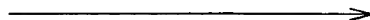


FIG. 15

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SENSE CURRENT



Free-NOL (1.5)
Spin-filter (Cu 1)
Free (CoFeNi 2)
Spacer (cu 2)
Pin (CoFe 2)
Pin-NOL (1.5)
Pin (CoFe 0.5)
Ru 0.9
Pin (CoFe 1.5)
Antiferro (PtMn 10)
Seed (NiFeCr 3)
Buffer (Ta 3)

FIG. 16

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SENSE  
CURRENT



Free-NOL (1.5)
Spin-filter (Cu 1)
Free (CoFeNi 2)
Spacer (Cu 2)
Pin (CoFe 2)
Pin-NOL (1.5)
Pin (CoFe 0.5)
Ru 0.9
Pin (CoFe 1.5)
Antiferro (PtMn 10)
Seed (NiFeCr 3)
Buffer (Ta 3)

FIG. 17

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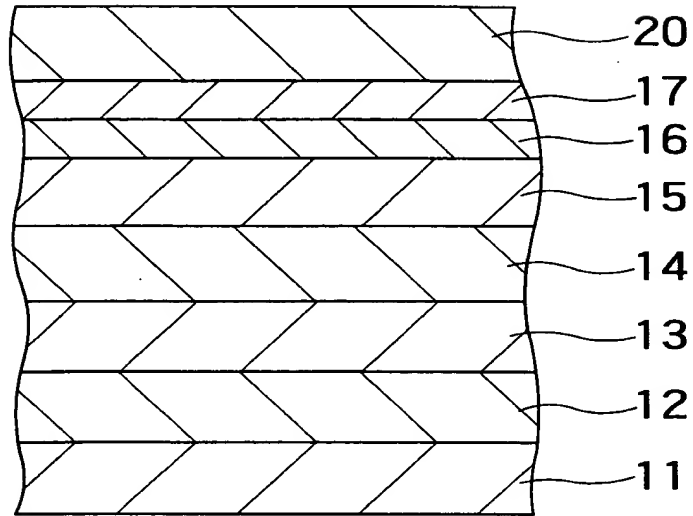


FIG. 18

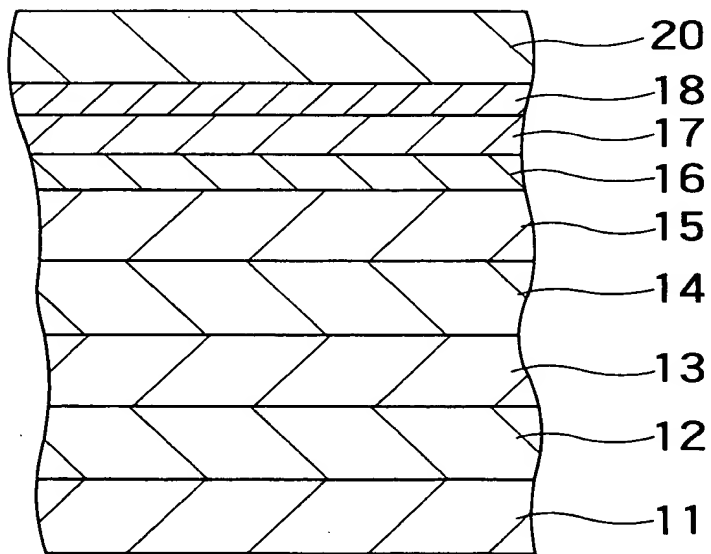


FIG. 19

FIG. 18



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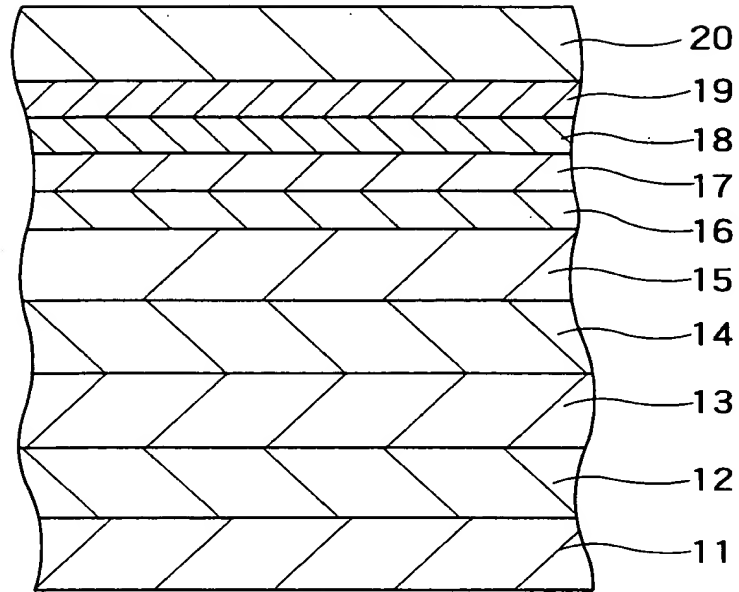


FIG. 20

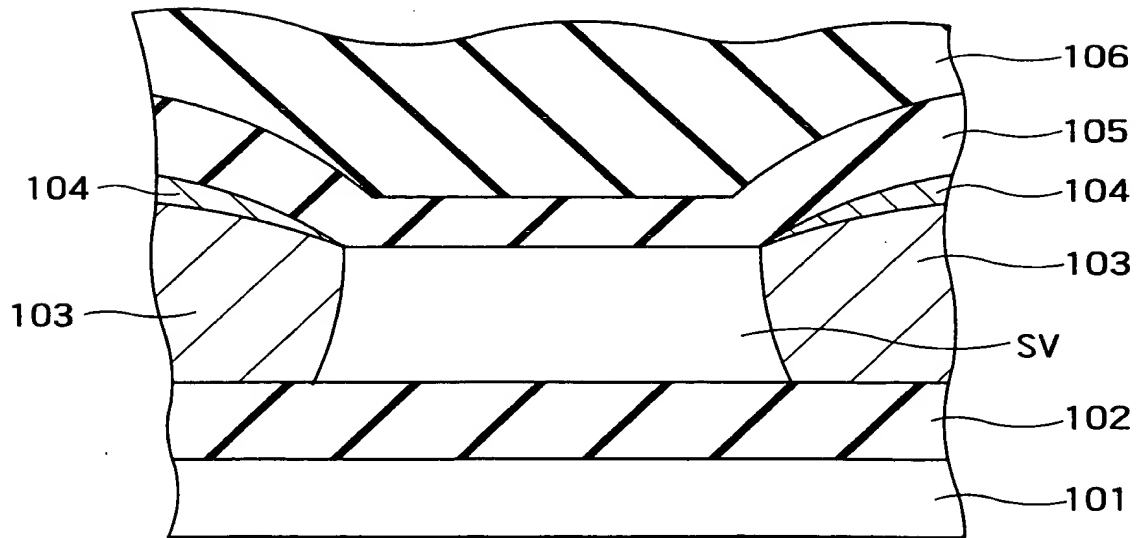


FIG. 21

FIG. 20

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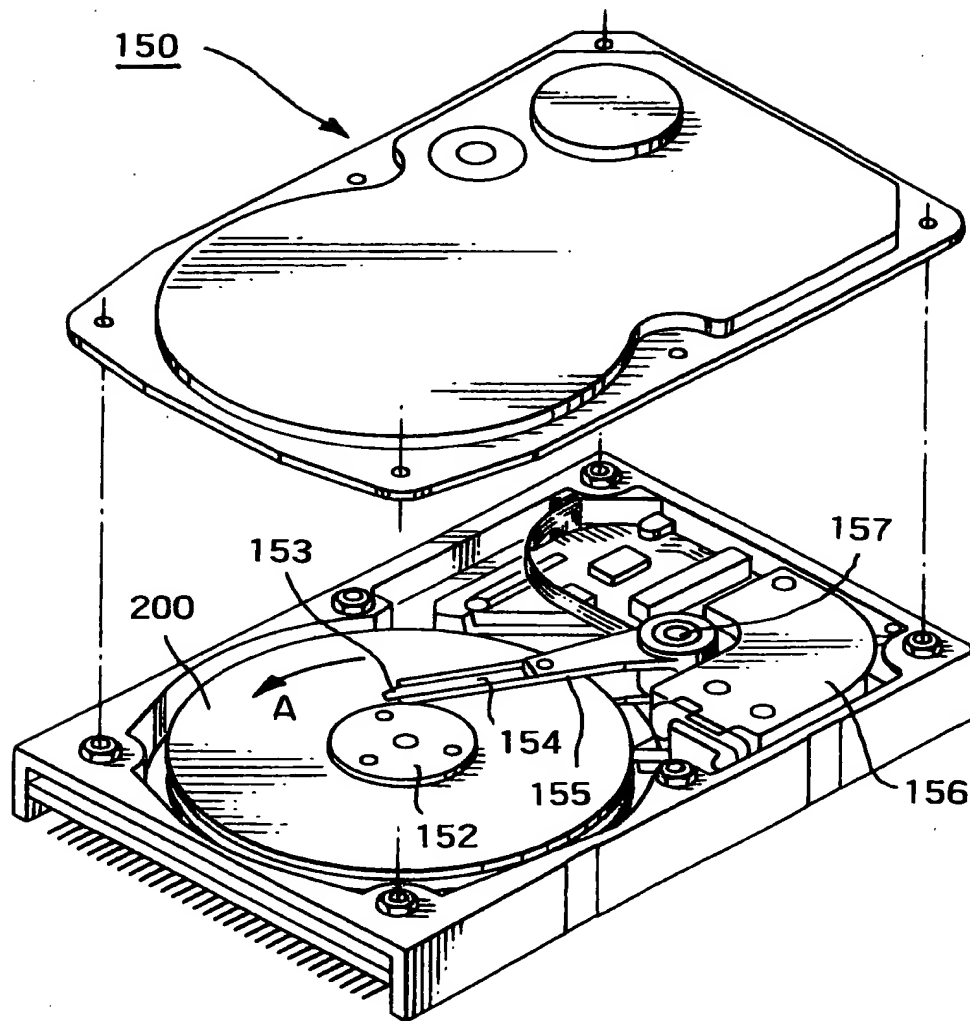


FIG. 22

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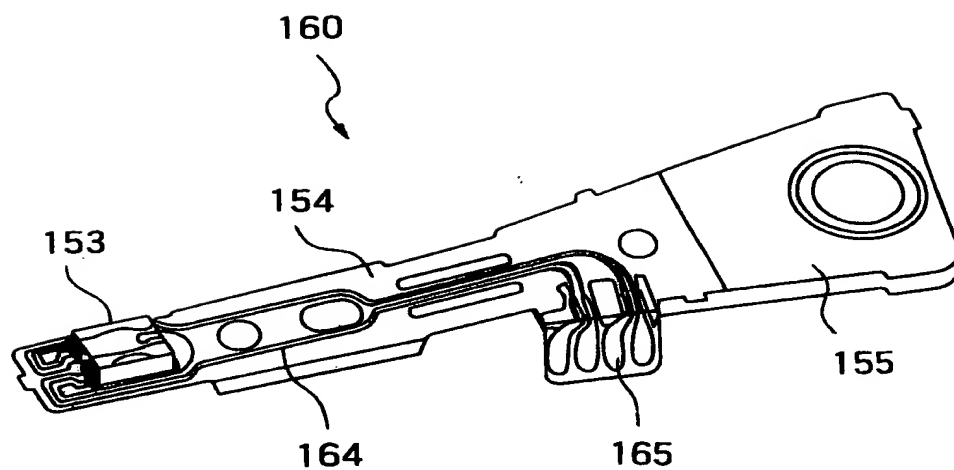
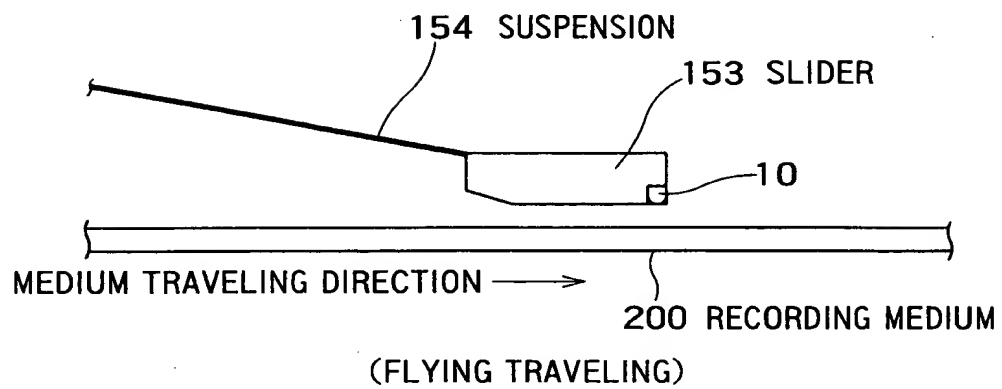
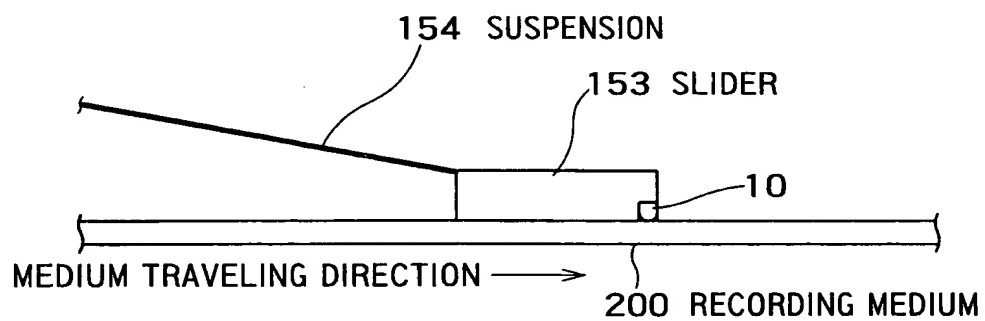


FIG. 23

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(a)



(CONTACT TRAVELING)

(b)

FIG. 24